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was not bad eating, tasting like coarse beef. Seal's flippers we also found not to be distasteful, though never to be regarded as a delicacy.

Dredging and collecting insects on fine days when not too calm filled up the measure of our seven weeks. The time passed rapidly, the days were too short for all the work we planned to do, and it was not without regret that we left the rugged untamed shores of the Labrador. On the afternoon of the very day she had set for her return to Caribou island, the *Nautilus* hove in sight. As she made our harbor she struck upon a sunken rock, tore off a piece of her keel, but slid off and came to anchor as near as practicable to the mission house, and then succeeded the mutual spinning of Labrador and Greenland yarns by the reunited party.

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RECENT LITERATURE.

COPE'S VERTEBRATA OF THE TERTIARY FORMATIONS OF THE WEST.¹—Just ten years ago (1875) a bulky quarto volume on the Vertebrata of the Cretaceous formation of the West, by Professor Cope, appeared, forming the second volume of the memoirs of the Hayden Geological Survey of the Territories. The ponderous volume now before us contains between three and four times as many pages and about fifty more plates. The work is designed to present figures and descriptions of the vast number of species of vertebrates of all classes, but more especially of the mammals of the Tertiary lake-basins of the West. For the first time the palæontologist has before him the materials for a view of that rich fauna which through the Tertiary period crowded the shores of the immense lakes whose sediments form the surface of our Western plains—a fauna whose descendants, vastly less in number though more highly specialized, still survive on this continent.

The subject is naturally the most attractive the palæontologist could have presented to him, since the materials represent a number of extinct orders, suborders and families, which fill more or less completely the wide gaps between the existing orders of mammals, and enable the student to examine the foundations, so to speak, upon which the existing groups have been built up; this, of course, has led not only to the solution of knotty points in classification, but to broader conceptions of the relations of the

¹ *U. S. Geological Survey of the Territories*. F. V. Hayden in charge. The Vertebrata of the Tertiary formation of the West. Book I. By EDWARD D. COPE. Washington, 1883-4. 4to, pp. 1009, with over 100 plates and numerous wood-cuts in the text.

extinct to the living groups, their genealogy, and finally the origin of the class itself from the lower vertebrates.

The points of special value to palæontology and bearing on the doctrine of evolution, worked out by Professor Cope in this volume, are quoted from Professor Hayden's letter of transmission to the Secretary of the Interior:

"1. The discovery of the fauna of the Puerco group, of thirty genera and sixty-three species. This includes many important details, such as the discovery and definition of three new families with many species of a new order, the Taxeopoda, as the Peripitychidæ, Meniscotheriidæ, and a new suborder, the Taligrada, represented by the genus *Pantolambda*; also the discovery of the *Plagiaulax* type (of the Jurassic) and other marsupials, and the Laramie saurian genus *Champsosaurus* in the Puerco group.

"2. The new classification of the Ungulata rendered possible by the discovery of the complete remains of the Wasatch types of *Phenacodus* and *Coryphodon*, especially the former, from Wyoming Territory. The light thrown on the phylogeny of the Ungulata by this discovery exceeds that derived from all other sources together.

"3. The new classification of the lower clawed mammals, based on the analyses of fifteen new genera and forty-seven new species of flesh-eaters and six new genera and sixteen new species of allied forms, all discovered since the publication of the author's volume in connection with the Wheeler survey.

"4. The restoration of *Hyracotherium*, the four-toed horse of the Wasatch group.

"5. The restoration of the genera *Triplopus* and *Hyrachyus* of the Bridger fauna.

"6. The determination of the systematic relation of the *Dinocerata* as seen in the genera *Loxolophodon* and *Bathyopsis*.

"The whole number of genera described in this volume is 125 and of species 349, of which 317 species were determined by Professor Cope.

"The explorations that furnished the materials for these volumes began in 1872 and are still being continued. It will therefore be readily seen that the amount of new matter towards the origin and history of the Mammalian group, brought together by the author in these two volumes, is most extraordinary, and will probably never be surpassed."

The explorations for the fossils here described were made by the author largely at his own expense, and full acknowledgment is made of the services of those who made the collections when the author was not in the field, and of the preparator in the laboratory.

The volume lay for a year in the bindery, so that while printed in 1883 it was not bound until 1884, and was not distributed until February of the present year.

Some typographical errors are not corrected in the errata, this is probably due to the fact that the printing was done mostly during the summer while the author was in the field, while a large amount of proof was sent to Mexico and there lost.

The present volume is divided into two parts, Part I relating to the Puerco, Wasatch and Bridger faunæ (Eocene); and Part II comprising the White River and John Day faunæ, Lower and Middle Miocene. Vol. IV is in preparation and will comprise the Upper Miocene fauna (Ticholeptus and Loup Fork fauna) and the Pliocene.

The introduction is divided into two sections, in the first of which the character and distributions of the Tertiary formations of the central region of the United States are noticed. In the second section are discussed the horizontal relations of the North American Tertiaries with those of Europe.

Then follow the description of the fossils, beginning with the fishes and ending with the mammals.

The general conclusions as to affinities and phylogeny are appearing in the NATURALIST in a series of articles which began two years ago.

The work is richly illustrated, the details amply supplementing the descriptions. As the result of extended investigations by an experienced comparative anatomist and morphologist, as well as palæontologist, this and the preceding volumes mark an epoch in American palæontology. It is a monument of energy and devotion to science, signalizing the triumphs of severe and trying physical labor in the field, as well as patient, comprehensive and searching work in the laboratory and study.

CLAUS' ELEMENTARY TEXT-BOOK OF ZOOLOGY.¹—The larger work of Professor Claus is the latest and most authoritative treatise on systematic zoölogy, having passed through four editions. This work, somewhat cut down in size, is the original of the present one. As it is, the first part is a bulky octavo, and, as when completed it will be in two volumes, the book will not be so easy of reference as if it formed a single volume. The book in its English dress is richly illustrated, the cuts, for the most part, carefully prepared, mostly selected by Dr. Claus himself. To the general part are devoted 179 pages; the usual subjects of organic and inorganic bodies, animals and plants, cells and tissues, correlation of organs, accounts of the different organs, intelligence and instinct, development and evolution receiving full and accurate treatment, though the author's style is at times heavy and prolix, the translators not always adding perspicuity or elegance to the cumbrous German expressions. For example, on

¹ *Elementary Text-book of Zoölogy*. General part and special part: Protozoa to Insecta. By Dr. C. CLAUS. Translated and edited by ADAM SEDGWICK, with the assistance of F. G. HEATHCOTE. With 706 woodcuts. London, W. Swan Sonnenschein & Co., Paternoster square, 1884. 8vo, pp. 615.